

## **9. RELATED PLANNING ISSUES**

Several commenting parties, principally ALPA and NATCA, maintain that Alternative W-1W will not provide the needed capacity at Lambert (Appendices C and G of this ROD). This belief is based in part on their view that the proposed operation of the expanded airport is unsafe and, therefore, cannot be operated as planned.

The major technical issues raised include:

- Safety
- Capacity
  - National Airspace System Capacity Benefits
  - Runway Stagger/Departure Dependency
  - PRM/No Transgression Zone (NTZ) Issue
  - Real Time Simulation
  - SIMMOD Input
  - Terminal Expansion
  - Benefit/Cost Analyses
  - ALPA/NATCA 18 points

### **SAFETY**

Concerns have been expressed about safety issues and capacity/delay estimates developed during the MPS and EIS processes. In analyzing and comparing capacity and delay reduction benefits of various alternatives during the planning and environmental review processes, both the FAA and the City of St. Louis gave the highest priority to safety requirements in accordance with FAA's statutory mandate. Safety of operation is a prerequisite for operation and expansion of any airport. The FAA has rules (such as FAA Order 7110.65L, Air Traffic Control) and local air traffic control procedures, that govern the operation and interaction of aircraft in virtually any conceivable situation and combination of weather conditions. These rules include such things as in-trail, horizontal and vertical separations. The same rules applied by FAA's Air Traffic Division in operating existing airports are applied in airport planning to estimate the capacity and delay benefit of alternatives. The existing airport or any expanded airport will be operated safely in accordance with the rules established by FAA and applied by the Air Traffic Division.

The FAA has carefully considered all safety issues raised during the EIS process. Safety implications related to airfield layout are addressed by designing facilities in accordance with FAA design standards. The selected alternative, W-1W, is designed in accordance with Advisory Circular 150/5300-13. Alternative W-1W enhances safety

because it reduces the project number of runway crossings with the existing airfield in 2015 from approximately 800 to 580 per day. See Appendix C of this ROD, response to Comment 8. See also Appendix G.

The selected alternative, W-1W, will use procedures that are already approved by FAA and used daily at airports throughout the United States. It was developed using FAA approved airport design standards for airfield layout.

## **CAPACITY**

Estimates of capacity and delay are complex. The capacity and associated delay of a particular airport is influenced by a large number of variables, including the runway layout, taxiway system, terminal layout, gate utilization, weather variability, volume of demand, peaking characteristics of demand, airline operating strategies and fleet mix, to name a few. Estimating how well some future runway configuration will perform becomes a nearly impossible task, unless computer models are used to simulate the operation of the future airport. These models are very useful in analyzing different alternatives by changing one or two of the variables for comparative runs of the model and observing the differences in average annual delay that result. Such computer models have been used throughout this process.

The hourly capacity numbers for any specific set of circumstances produced as a result of this modeling are of far less importance than the relative magnitude of delay estimated. Any comparison or discussion of hourly capacity numbers for a specific case that does not include the associated delay results in an incomplete understanding of the operating efficiency of the case.

ALPA has stated that the runway stagger, which influences the dependence of departures from the existing Runway 30L on arrivals to the new Runway 30W, negates the advantage of the new runway. The FAA and the MPS consultant have always agreed that the departure dependence will exist. The condition was included in the modeling assumptions. The result is that the proposed expansion provides sufficient delay reduction to produce a very favorable benefit/cost ratio and acceptable projected delay levels through the planning period (the year 2015).

All of the inconsistencies in capacity/delay figures cited by ALPA have been derived from taking numbers from one study that used one set of assumptions and comparing them to another study that used different assumptions. Valid comparisons depend on use of the same assumptions and variables. Simulations for capacity and delay analysis are conducted by comparing each alternative with the existing airport and changing one variable at a time while keeping all the other variables constant.

Generally, capacity and delay estimates have more importance for comparative purposes than for any given absolute value.

The planning process for Lambert included capacity/delay analyses utilizing four different computer models: the FAA Runway Capacity Model, the FAA Annual Delay Model, SIMMOD and the National Airspace System Performance Analysis Capability (NASPAC) model. The assumptions and conditions used as input for these models were extensively discussed and coordinated with appropriate parties. In the case of the first three models, this included the Airfield and Airspace Working Group (AAWG). This group was comprised of representatives such as the St. Louis Air Traffic Control Tower (ATCT), ALPA, the airlines, Air Transport Association (ATA), and others. In the case of the National Airspace System Performance Analysis Capability (NASPAC) analysis, the FAA's William J. Hughes Technical Center (FAA Technical Center) performed the study, with input coordinated with FAA Airports Division and the St. Louis ATCT.

In the alternatives analysis stage of the master planning process, FAA's capacity and delay models were used to compare the relative operational efficiency of the various alternatives. The assumptions and results of this analysis are documented in Section 2 of the Master Plan Supplement Technical Compendium (MPSTC). Additionally, a sensitivity analysis was performed to assess the impact of changing circumstances that occurred during the planning process.

Once STLAA selected its preferred alternative, W-1W, different simulations were performed utilizing the more sophisticated SIMMOD computer model. The goals of the SIMMOD analysis were twofold: (1) to evaluate the most efficient means of operating the preferred airfield alternative, W-1W, reconfirming its overall operational benefits; and (2) to evaluate effects on aircraft delays and taxiing times of potential refinements to the operation and layout of Alternative W-1W. For these reasons, eighteen simulations were performed. The conditions and results of the model simulations are documented in Section 6 of the MPSTC.

The FAA Technical Center also performed capacity and delay simulation modeling to compare the preferred alternative (W-1W) to the existing airfield. This analysis utilized FAA's NASPAC computer model. Assumptions, conditions and results of this study are documented in a report published by the FAA Technical Center in June 1997, entitled "Evaluation of the Proposed Lambert-St. Louis Airport Expansion" and are discussed elsewhere in this section of the ROD.

Within each analysis, the alternatives being compared were subjected to the same sets of variables, which could affect the capacity/delay results of the study. This is necessary in order to draw valid comparisons between alternatives. Results of studies

performed under different assumptions and circumstances do not provide for valid comparisons.

The proposed expansion does rely on the use of a PRM to allow dual simultaneous independent IFR approaches to the outboard runways. This procedure has been tested and approved by the FAA. Simultaneous IFR approaches to closely spaced parallel runways were subjected to real-time simulations prior to the FAA approving them. In addition, a PRM was installed and operated for over a year in Raleigh-Durham, North Carolina.

In summary, the proposed expansion at Lambert has been subjected to simulations using the FAA Runway Capacity Model, the Annual Delay Model, the SIMMOD model, and the NASPAC model. In each case, the proposed expansion has shown the potential to increase capacity and significantly reduce projected delays.

### ***National Airspace System Capacity Benefits***

The lack of airfield capacity at high-activity airports in the United States is a frequent cause of "bottlenecks" in the nation's aviation system. Lambert is identified as 1 of 23 existing delay-problem airports in the FAA's 1994 Aviation Capacity Enhancement Plan; therefore, the proposed project at the airport is crucial to the development of needed capacity for the NAS.

In 1997, the FAA Technical Center conducted a study of the proposed expansion of Lambert-St. Louis International Airport to determine the expected benefits of the proposed project to Lambert and the NAS. The study was initiated at the request of FAA Central Region Airports Division. A report documenting the methodology used and results of the study was published in June 1997.

The NASPAC Simulation Modeling System (SMS) was used to perform the task. The NASPAC SMS is a discrete event simulation model that tracks aircraft as they progress through the NAS and compete for Air Traffic Control (ATC) resources, e.g., airports, sectors, flow control restrictions and arrival and departure fixes. The NASPAC evaluates system performance based on the demand placed on resources modeled in the NAS and records statistics at the 50 busiest national airports and 8 associated airports.

The study used the model to calculate local and system-wide delays, with and without the new runway proposed for the airport. Monetary benefits of the new runway were calculated using the NASPAC Cost of Delay Module. The Cost of Delay Module calculates the passenger and operational delay cost based on actual cost reported by the airlines to the Department of Transportation's Office of Aviation Statistics. The

results of the study indicate that the construction of the new runway would provide substantial monetary benefits to the airlines and the user community due to the abatement of operational and passenger delays locally and in the NAS.

Data were presented for operational delay, passenger delay and delay savings. Operational delay occurs whenever an aircraft has to compete for an ATC system resource. Passenger delay reflects the “ripple-effects” in the NAS and shows the lateness of a flight at the destination airport. The delay savings represent the difference in delay with or without the Lambert expansion project. The delay savings assumed that the current NAS stays essentially the same for the study period (2005 - 2015), with some new technologies introduced and some airspace procedures revised.

The new runway will reduce operational delay at Lambert by 63 percent in 2005, 65 percent in 2010 and 66 percent in 2015. NAS-wide, operational delay will be reduced by 5 percent in 2005, 8 percent in 2010 and 14 percent in 2015 with the implementation of the improvements at Lambert.

The new runway will also reduce passenger delay at Lambert by 55 percent in 2005, 52 percent in 2010 and 57 percent in 2015. NAS-wide, passenger delay will be reduced by 7 percent in 2005, 9 percent in 2010 and 18 percent in 2015.

Delay savings in monetary terms was also analyzed by the NASPAC model. The monetary savings indicated do not represent actual cash savings but an estimate of what could be saved by the airlines and passengers with the implementation of the Lambert expansion project. The benefits to the airlines were based on their direct cost as reported to the Department of Transportation. The passenger cost was assumed to be \$45.50 per passenger hour, if they were reimbursed for lost time caused by delays in the system.

The estimated savings that could be realized by implementing the new runway at Lambert would result in significant operational and passenger delay savings both at Lambert and NAS-wide. In terms of cumulative operational delay savings during the study period (2005 - 2015), the model predicted a \$1.9 billion savings at Lambert and a \$5.1 billion savings NAS-wide. Likewise, cumulative passenger delay savings over the study period was predicted to be \$1.4 billion at Lambert and \$9.5 billion NAS-wide.

### ***Runway Stagger/Departure Dependency***

The selected alternative, W-1W, includes construction of one new parallel runway located 4,100 feet south of the existing north parallel runway (30R). The threshold of the proposed new runway is staggered approximately 12,200 feet to the west from the threshold of existing Runway 30R. This location, along with the location of the existing

south parallel runway (30L), results in departures from either of the existing runways being dependent on arrivals to the new runway in IFR west flow conditions.

Critics of the W-1W plan claim this operation is unsafe and inefficient and, therefore, does not provide the capacity necessary to reduce delays as the MPS and FEIS suggest it will.

The stagger of Alternative W-1W increases safety because simultaneous arrivals will occur on runways separated by 4,100 feet instead of 3,400 feet. This is 600 feet more than the minimum lateral spacing of 3,400 feet allowed under PRM operations for straight-in approaches. The effects of the runway stagger and the dependency of departures have been thoroughly analyzed in the MPS. In addition, these issues have been addressed in the FEIS, in particular, see the responses to Comments 2-39, 2-64, 2-65, 2-137, 2-142, 2-144 and 2-150 in Appendix V. The SIMMOD input and ALPA/NATCA 18 points are discussed below.

### ***Precision Runway Monitor/No Transgression Zone Issue***

This issue has both safety and capacity aspects. It also relates to the real-time simulation issue discussed below. The safety and capacity of operational procedures contemplated for use with Alternative W-1W has been the subject of numerous comments previously responded to in the FEIS. See FEIS response to Comment 1-50.

The Precision Runway Monitor (PRM) is a system comprised of a rapid update radar, an enhanced color graphic monitor and a software package, which aids the air traffic controller in more accurately monitoring the position of aircraft on final approach to a runway. As noted above, use of a PRM to allow dual simultaneous independent IFR approaches to closely spaced parallel runways has been subjected to real-time simulation and approved by the FAA. The FAA has certified PRM for use to provide simultaneous independent approaches with parallel runways separated by at least 3,000 feet (FAA Order 8260.39) (3,400 feet for straight-in approaches). PRM is the primary tool that has allowed the FAA to achieve this. The W-1W proposal for St. Louis includes outboard runways spaced 4,100 feet apart, and stipulates that a PRM would be required to provide independent approaches. Runways spaced 4,300 feet apart allow simultaneous independent approaches without a PRM.

One of the features of the PRM system is a digital map displayed on a computer terminal monitored by an air traffic controller. The digital map includes an area designated as the No Transgression Zone (NTZ). The NTZ is generally centered between the approach paths of the runways being monitored with the PRM. In the case of the Lambert expansion, the outboard runways are separated by 4,100 feet. The NTZ is 2,000 feet wide, centered between the runways. Therefore, the edge of the NTZ is

1,050 feet from the centerline of each outboard runway. Since the existing two parallel runways are 1,300 feet apart, the future center runway will be 250 feet inside the NTZ. The purpose of the NTZ is to assure proper horizontal separation between arrivals.

When operating the proposed expanded airport in IFR conditions in west flow, the plan envisions approaches to the outboard runways, existing 30R and the new runway 30W (which will be designated 30L after expansion), while allowing a departure on existing Runway 30L (which would be 30C after expansion). With the PRM in operation, this will result in the departure off existing Runway 30L (30C after expansion) entering the NTZ. With the current software design for the operation of PRM, the departure would generate an alarm notifying the controller monitoring the PRM that an aircraft has penetrated the NTZ.

Some commenters have expressed concerns that PRM has not been specifically tested with the approximately 12,200-foot stagger contemplated for Alternative W-1W or with simultaneous approaches to the outboard runways with departures from the center runway. Others comment that use of PRM with a staggered runway and departures on a center runway in the NTZ exceeds the parameters for PRM certification. The FAA has carefully considered whether use of the PRM is authorized in these circumstances. The Air Traffic Division and Flight Standards Division reviewed the plan for operation of Alternative W-1W and requirements under Air Traffic Control Handbook 7110.65 Chapters 3 and 5 and PRM procedures in FAA Order 8260.39 as they apply to that plan in detail. That review indicates that the planned operation of the runway configuration is authorized as explained below:

When operating in IFR conditions in west flow, aircraft will arrive on the outboard Runways 30W (which will be designated 30L after expansion) and 30R, while departing 30C. Departures from Runway 30C will be dependent on arrivals to both outboard runways. Before a departure is released from Runway 30C the air traffic controller will apply the provisions of FAA Order 7110.65L Paragraph 5-9-8 c.3, which defines conditions for termination of radar monitoring. Internal air traffic procedures will specify that when provisions of paragraph 5-9-8 c.3 have been applied, radar monitoring shall be terminated and no action will be required in response to any alarm that may be generated by aircraft departing runway 30C. The fact that a departure from the center runway (current 30L) is inside the NTZ is not relevant because radar monitoring will have been terminated for the approach, and PRM is not used to separate departures.

W-1W does not depend upon a change in the PRM software to deactivate alarms for departures to assure safety. The purpose of the NTZ is to enable controllers to detect loss of separation between simultaneous approaches. To conduct operations as planned, modification of the software may be required. If such a software modification is required it will be subject to appropriate testing not involving real-time simulation.

This review of the proposed procedures determined that they are authorized by current ATC guidance and consistent with procedures that would require real-time simulation, as discussed below, are necessary. This determination is documented in letters dated July 31, 1998, from the FAA Administrator, Jane Garvey, to Congressmen James Talent and Richard Gephardt (Appendix I of this ROD). The result of this review and documentation is to confirm that the proposed expanded runway configuration can be operated safely as planned and depicted in the MPS and the FEIS and that real-time simulation is not necessary to verify the safety of the procedures.

### ***Real-Time Simulation***

The request for real-time simulation was first submitted to the FAA in a letter dated December 29, 1997, from ALPA representative, Dean Adam, to John Turner, Central Region Administrator, FAA. In that letter, ALPA stated that real-time simulation was the only way to resolve capacity questions surrounding the W-1W proposal. Real-time simulation was subsequently requested to address claimed significant safety impacts and to confirm the operational assumptions in the MPS and FEIS, particularly in west flow. ALPA considers such a study essential to determine whether controllers can actually pair arrivals of aircraft having different approach speeds as simulated by computer modeling. ALPA also views testing as needed to address safe use of the NTZ for departures on the center runway.

Real-time simulation is the process by which computers, flight simulators, target generators and radar scopes, operated by real air traffic controllers and actual pilots, replicate actual flight operations in an air traffic control environment. The controllers are located in a radar lab (normally at the FAA Technical Center) while the pilots operate flight simulators at various locations throughout the country, many of which are leased from airline training departments.

The process begins with a definition of requirements. Next comes the design of the simulation, which involves the development of scenarios to reflect such variables as fleet mix, weather conditions, runway configuration and use, air traffic procedures, navigational aids, approach speeds and in-trail and lateral separation. Then the actual real-time simulation is completed. If further risk analysis is required, the data is sent to the FAA's Aeronautical Center for use in a computer simulation system. Analysis of the resulting data leads to a final report.

Real-time simulation has been used by FAA numerous times to test the viability of new procedures that have been developed for specific applications. Notably, the real-time simulation process has been used by FAA to test simultaneous independent parallel IFR approaches to closely spaced parallel runways using a PRM, when it was a new



approach aid system. As a result of this and other analyses, FAA approved dual simultaneous independent IFR approaches to parallel runways spaced as close as 3,400 feet apart using PRM. Subsequently, FAA approved dual simultaneous independent IFR approaches to parallel runways spaced as close as 3,000 feet apart (3,400 feet for straight-in approaches) using PRM, with a 2½ degree offset of one of the approaches.

Real-time simulation was deemed unnecessary for this project because the procedures to be used with Alternative W-1W are authorized under existing procedures that are used daily at airports throughout the United States. Some commenters stated that real-time simulation would show that Alternative W-1W would not have the capacity claimed in comparison to other alternatives, particularly in west flow conditions. As new and untested procedures are not needed to support Alternative W-1W, real-time simulation would have no bearing on estimates of capacity and delay. While real-time simulation is a valuable tool in analyzing new and untested procedures and special situations, it is not a capacity tool. It does not provide capacity/delay numbers for comparison of alternatives.

### ***SIMMOD Review***

ALPA has commented throughout the environmental review process that various characteristics of Alternative W-1W were not properly reflected in the computer modeling and simulation analysis used by the airport's consultant and by the FAA in determining capacity. ALPA contends that incorrect information was used as input to the computer models, particularly the SIMMOD model. Others have commented that the SIMMOD capacity calculations overstate the capacity of Alternative W-1W and understate that of the existing airfield and Alternative NE-1a and that all alternatives should be evaluated using SIMMOD.

Some of the factors ALPA believes were incorrectly analyzed include the runway stagger, the dependency of departures from the center runway, the ground movements in front of the terminal, the arrival rates for the existing parallel runways, the arrival rates for the Dependent Converging Instrument Approach (DCIA) operation for the existing airfield, runway crossings and the effects of wake turbulence.

During the MPS, the City of St. Louis compared alternatives using the results of the FAA Airfield Capacity Model and the FAA Annual Delay Model. Numerous sensitivity analyses were performed throughout the planning and environmental review process using the capacity and delay models in order to determine what, if any, effect the suggested changes would have on the alternatives analysis. The latest of these analyses was conducted for the No-Action, S-1, NE-1a and three scenarios for W-1W

in response to a list of 18 points that ALPA presented to FAA during a meeting on June 9, 1998 (Appendix C of this ROD).

After the capacity and delay models were used to make estimates that enabled the City of St. Louis to select its preferred alternative, Alternative W-1W, the SIMMOD was used to refine comparisons between Alternative W-1W and the No-Action Alternative. Although FAA had already conducted one study that confirmed the results of the MPS SIMMOD analysis, to further address concerns about the adequacy of FAA's independent review, the FAA Technical Center reviewed the input files used by the consultant for the SIMMOD analysis, as well as the procedures used for modeling the runway crossings, departure dependencies and taxiway movements in front of the terminal.

The results of the FAA Technical Center review of the SIMMOD analysis of the proposed expansion are documented in an August 1998 report. The Technical Center established that the analysis was performed in conformance with the accepted standard practice and the results obtained are reasonable. The Technical Center's letter dated July 29, 1998, summarizing the results of this review, is documented in Appendix I of this ROD. As it is reasonable for the FAA to select Alternative W-1W based upon the comparison with other alternatives, it would not be useful to conduct additional SIMMOD analyses to refine other alternatives.

### ***Terminal Expansion***

One of the issues raised concerns the plan for expansion of the terminal facilities included in the overall expansion plan for Lambert.

The local press reported in May 1998, that TWA (the major hub operator at Lambert) was pressing the airport for immediate construction of a new 60-gate terminal. It was also reported that TWA was contemplating withdrawing its support of the W-1W plan, if the airline did not get its new terminal by the time the new runway was to open. This report stirred controversy, because the MPS and the FEIS envisioned development of new terminal facilities on a more gradual schedule.

The MPS and the FEIS documented terminal development to the west of the current terminal location, including a location west of Runway 06/24 (Figure S.3 in Appendix J of this ROD). The FEIS addresses impacts of terminal development relating to location (footprint) of new facilities and gates to accommodate the forecast aviation demand through 2015. It was estimated that 105 to 110 total gates would be necessary to accommodate the aviation demand in 2015. As part of the mitigation program in the FEIS, STLAA has agreed that when terminal design progresses sufficiently, the STLAA

will conduct a carbon monoxide hot-spot analysis for terminal expansion to ensure that the terminal structure is designed efficiently from an air quality standpoint.

At the request of the FAA, the STLAA and TWA subsequently clarified the level and extent to which negotiations for new terminal facilities for TWA had progressed (see letters from STLAA and TWA in Appendix F of this ROD). Both parties reported that preliminary discussions had taken place, but that both STLAA and TWA were in full support of the expansion plan as developed in the MPS and documented in the FEIS.

An issue directly related to the terminal expansion plan that has been the subject of comments is the ground movement on Taxiway Delta in front of (and adjacent to) Concourse C. The current configuration of this taxiway in relationship to the terminal requires that aircraft using the gates on the north side of Concourse C push back into the taxiway. This restricts the efficient utilization of the taxiway.

This limitation was identified at the alternatives analysis stage in the MPS process. A number of possible solutions to the problem were explored with the participation of the AAWG. Some of those solutions were:

1. Remove a section of Concourse C near the main terminal to allow one-way taxi flow into the “back alley” between Concourses C and D, with opposite flow along the north side of Concourse C.
2. Move Runway 12R/30L 300 feet north of its present location to allow enough room to clear push backs from the terminal with a new parallel taxiway.
3. Reduce the width of Runway 12R/30L to 150 feet (presently 200 feet) to allow room to shift Taxiways Alfa and Delta 50 feet to the north.
4. Eliminate approximately 11 conventional gate positions on the north side of Concourse C, replacing them with 5 “power-in, power-out” gate positions to eliminate push backs into the taxiway--to be accomplished when terminal expansion to the west of the present terminal provides enough gates to compensate for the six-gate net loss required by the plan. This is the solution that was selected.

In summary, terminal development up to a total of 110 gates is covered in the FEIS. Terminal development west of the current terminal and some terminal development west of Runway 6/24 is documented in the FEIS. The proposed terminal areas are shown in green in Figure S.3 of the FEIS (Appendix J of this ROD). Impacts of the terminal facilities were considered for each of the 22 environmental categories

examined in the FEIS and documented in the FEIS. The only additional analysis needed is a carbon monoxide hot-spot analysis unique to exact terminal design. Terminal development in excess of 110 total gates would need additional environmental review.

## ***Benefit/Cost Analyses***

Two separate benefit/cost analyses were prepared during the study process. The first was conducted by the MPS contractor for STLAA. A second independent BCA was conducted by the FAA.

### ***Master Plan Supplement Benefit/Cost Analysis***

Benefit/cost ratios (BCR) were computed in the MPS. Benefits included aircraft travel time and delay savings, while costs were calculated using construction costs to be incurred from 1996 to 2015. According to the analysis prepared by STLAA, the new runway at Lambert (Runway 12W/30W) would have a BCR of 2.2, indicating that its economic benefits are over two times greater than the project cost, and that it is economically preferable to not constructing the runway.

### ***FAA's Independent Benefit/Cost Analysis***

As a supplement to the analysis of the Lambert expansion plan (W-1W) for the FEIS, and in anticipation of a request for funding under the Airport Improvement Program (AIP), the FAA Airports Division requested the FAA's Systems and Policy Analysis Division (APO-200), Office of Aviation Policy and Plans, to conduct an independent BCA of the proposed plan.

In July 1997, the FAA performed and completed an independent BCA for Lambert. The analysis, performed by FAA's Systems and Policy Analysis Division, Office of Aviation Policy and Plans, compared Alternative W-1W with the No-Action Alternative. The methodology, assumptions and results of the analysis are documented in a report entitled "Benefit-Cost Analysis for Lambert-St. Louis International Airport Capacity Enhancement Project," dated July 31, 1997.

The results of the FAA analysis indicate that Alternative W-1W has a BCR of 2.6 compared to the No-Action Alternative, making it economically preferable to the No-Action Alternative.

The FAA report also includes a risk analysis, which calculates the effect of cost overruns, construction schedule slippage, traffic growth variations, and combinations of

these variables. The risk analysis indicates that Alternative W-1W has a high probability of maintaining a BCR greater than 1.0 under a wide variety of scenarios.

In summary, regardless of whether one relies upon the BCR of 2.2 from the MPS or the FAA's BCR of 2.6, the BCR for Alternative W-1W is clearly advantageous.

### ***Air Line Pilots Association/National Air Traffic Controllers Association 18 Points***

ALPA and NATCA presented a written list of 18 concerns to FAA senior staff at a meeting on June 9, 1998, and submitted basically the same list when they met with the Associate Administrator for Airports on June 16, 1998.

In response to these concerns, the FAA Airports and Air Traffic staff met with STLAA and its consultant to determine the variables to examine in a "sensitivity" analysis. A sensitivity analysis is a process of reevaluation or recalculation of a previously completed analysis using one or more changed variables. The purpose of the sensitivity analysis is to see what effect the changed variables have on the results of the analysis, or how sensitive the results of the analysis are to the variables that are the subject of the sensitivity analysis. In this case, at the request of the FAA, STLAA and its consultant performed a sensitivity analysis to determine what effect the use of the variables suggested by ALPA and NATCA would have on the results of the capacity/delay analysis and the overall analysis of the alternatives. The results of the sensitivity analysis indicate that incorporation of the ALPA/NATCA data would make no significant difference in the capacity/delay and cost/benefit analysis relative comparison of the alternatives. The details of the sensitivity analysis are included in Appendix C of this ROD.

In recent comments, both ALPA and Bridgeton have misinterpreted FAA's use of different assumptions as proof that the assumptions and analyses in the MPS and the FEIS are incorrect. The sensitivity analysis was done with, among other assumptions, a lower arrival rate of 60 arrivals per hour instead of 72 per hour during VFR 1 conditions for the No-Action Alternative and Alternative W-1W. It also examined the effect of using outboard runways during VFR 1 and 2 conditions and west flow with Alternative W-1. These analyses were done to accommodate and address concerns about the validity and integrity of the process.

The operational assumptions used in the planning and EIS processes remain reasonable and valid. The arrival rate of 72 arrivals per hour includes ample time for voice communication between pilots and controllers and for clearances. The assumptions used in the MPS and the FEIS are consistent with operational efficiency. During good weather and west flow, it would be more efficient to use the new runway for

departures and the existing runways for simultaneous independent arrivals than to sequence departures between gaps in simultaneous arrivals to the outboard runways given the demand for departures at Lambert.